

NAVAL MEDICAL RESEARCH AND DEVELOPMENT NEWS

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Pentagon Health Policy Panel Tours NAMRU-San Antonio

By Joe N. Wiggins, Public Affairs,
NAMRU-San Antonio

The Department of Defense panel that provides independent health policy recommendations recently saw firsthand the latest in Naval and joint service biomedical research facilities during their visit to Fort Sam Houston.

The Defense Health Board (DHB), a federal advisory committee under the Secretary of Defense, was shown capabilities, research findings and ongoing projects while touring the Naval Medical Research Unit-San Antonio ([NAMRU-San Antonio](#)), located in the Tri-Service Research Laboratory and the Battlefield Health and Trauma Research Institute.

Hosted by Capt. Vincent Delnno-centiis, commanding officer of NAMRU-San Antonio, the group gained a first-

hand perspective of the facilities' capabilities by viewing recently-published findings. The tours informed the 19-member panel of the latest projects by several members of the staff, including such key areas as combat casualty care, dental research and directed energy research.

One of the impressions left on members of the group was how benefits from military biomedical research can impact the civilian medical community.

"The military has figured this [casualty care] out, and we have a lot of lessons to learn from you," said Dr. Nancy Dickey, president of the Texas A&M University Health Science Center and current president of the DHB.

A former U.S. surgeon general also left impressed with the lessons learned so far and the possible future

benefits to the entire medical community.

"What you are doing here will soon change emergency medical services around the country," said retired U.S. Public Health Service Vice Adm. (Dr.) Richard H. Carmona, the 17th Surgeon General of the United States. Carmona is also a Vietnam-era veteran, a former deputy sheriff and chairman of the Arizona Southern Regional Emergency Medical System. "Through the DHB, Dr. Dickey is working to make sure we don't slow down the progress of lessons learned through Operation Iraqi Freedom and Operation Enduring Freedom. It's important we not lose the lessons learned, as happened after the Vietnam era drawdown."

"It is very important that we share
(Continued on page 6)



Capt. Vincent Delnno-centiis, commanding officer of NAMRU-San Antonio (left), stands next to Maj. Gen. (Dr.) Byron C. Hepburn, commander of the Air Force's 59th Medical Wing, as he welcomes members of the Defense Health Board to the Tri-Service Research Laboratory and introduces members of his staff. Photo by Joe N. Wiggins.

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Commanding Officer's Message

In today's austere fiscal environment, managing biomedical R&D is challenging and our focus must always be on the health and medical readiness of our warfighters. As part of the effort to create an organized and focused research program, strong collaborations between the medical research arms of other countries' militaries provide opportunities to improve operational medicine.

I had the opportunity recently to participate with our researchers in a planning meeting in the U.K. for a joint research collaborative multi-site antibiotic treatment trial for travelers' diarrhea among deployed U.S. and U.K. Forces in Afghanistan, Djibouti and Kenya. The results of this study will be used to develop clinical practice guidelines for the management of travelers' diarrhea during deployments of the U.S. Navy, U.S. Marine Corps and U.K. Ministry of Defense forces and may provide guidelines for civilian travelers as well. This effort includes NMRC, NAMRU-3, the U.S. Army Medical Research Unit – Kenya, the U.S. National Institutes of Health, the Uniformed Services University, and the United Kingdom Ministry of Defense.

Also in February, the Navy SG signed an international agreement for a collaborative research project on blast-induced brain injury between NMRC and the Department of National Defense of Canada. Traumatic brain injury induced by exposure to blast accounts for the majority of combat injuries in recent wars in the Middle East. Allied warfighters remain at risk of injury and death following blast exposure, as are noncombatant civilians who might be exposed to blast during terrorist activities. This three-year study will investigate changes in various brain receptors following exposure to blast, study the role of proteases in the pathophysiology of blast-induced brain injury, and determine the potential of pharmacological agents to protect against this type of injury.

These efforts bring together a network of global military and civilian researchers and offer access to state-of-the-art facilities to produce solutions to shared operational medicine problems. Collaborative approaches like these can improve efficiencies, minimize redundancies, fill gaps and speed discovery and deployment of effective patient treatments and improve outcomes.

Commanding Officer sends,
Richard L. Haberberger, Jr.
CAPT, MSC, USN



Navy Researchers Contribute to Article on Dengue Biomarkers

From NAMRU-6 Public Affairs

Dengue disease, caused by the dengue virus and spread by mosquitoes, poses a risk to nearly two-fifths of the world's population. Among those at risk are military personnel stationed or serving in tropical areas of Latin America, Africa and Asia. Distinguishing which patients will progress to manifest the life-threatening symptoms of dengue hemorrhagic fever remains a key diagnostic issue. A group of U.S. Naval Medical Research Unit No. 6 ([NAMRU-6](#)) researchers recently contributed to an article published in the American Journal of Tropical Medicine and Hygiene titled "A Three-Component Biomarker Panel for Prediction of Dengue Hemorrhagic Fever" that addressed this challenge.

Combining with study site doctors

in Venezuela, dengue experts at University of California-Davis, and Translation Science and Preventive Medicine experts at University of Texas-Galveston, the team investigated eleven laboratory parameters in order to find a correlation with disease outcome. Three laboratory tests, including two that are routinely collected, were able to accurately predict who would progress to severe disease.

The team aims to confirm these initial findings by conducting further studies incorporating more patients and new study sites including Iquitos, Peru, an area with high dengue transmission where one of NAMRU-6's research laboratories is located.

Active duty members affiliated with the initial study include Lt. Cdmr. Tadeuz Kochel, Cdmr. Patrick Blair

and Lt. Col. Eric Halsey. Other NAMRU-6 contributors include Amy Morrison, Claudio Rocha, Brett Forshey and Isabel Bazan.

Infection with the dengue virus may result in disease with a wide range of severity and symptoms. The most common form of symptomatic disease, dengue fever, is considered benign, but nevertheless may cause excruciating muscle and bone pain, leading to the nickname "breakbone fever." More severe forms of dengue virus infection may result in dengue hemorrhagic fever or dengue shock syndrome, characterized by life-threatening bleeding and organ dysfunction. Dengue fever may be managed on an outpatient basis; the more severe forms of dengue infection necessitate close monitoring by medical professionals in a healthcare setting.

U.S. and U.K. Military Study Treatment of Travelers' Diarrhea

By Cmdr. Mark S. Riddle, NMRC

Travelers' diarrhea (TD) is a major health threat to readiness and continues to decrease human performance during combat and non-combat operations. Beyond the acute effects, an accumulating body of evidence raises serious concerns about the long-term health consequences of these infections, which can include chronic deployment-associated gastrointestinal, rheumatologic and neurological sequelae.

A research team including members from the Naval Medical Research Center (NMRC), Silver Spring, Md.; the U.S. Naval Medical Research Unit No. 3 (NAMRU-3), Cairo; the U.S. Army Medical Research Unit – Kenya; the National Institutes of Health; the Infectious Diseases Clinical Research Program of the Uniformed Services University; and the United Kingdom Ministry of Defence (MoD), met February 20-23 at the Institute of Naval Medicine in Alverstoke, U.K. to discuss planning for a joint research study directed at gaining critically needed information on

the treatment of acute watery diarrhea and dysentery (travelers' diarrhea) among deployed U.S. and U.K. forces.

Without effective vaccines, currently available strategies to mitigate the disease are primary prevention through improved field sanitation and individual hygiene countermeasures and secondary prevention through early and effective treatment. Recent reports have highlighted a current deficit in effective management of TD in deployed settings due to a combination of the lack of clinical trial evidence for deployment-adapted treatment regimens (single-dose regimens) and gaps in provider knowledge and clinical management practices.

These factors led to the support from the Bureau of Medicine and Surgery's Wounded Ill and Injured program to conduct a military-to-military collaborative multi-site antibiotic treatment trial among deployed military personnel seeking care for TD in Afghanistan, Djibouti and Kenya.

The primary aims of this research program are to accelerate the time to return to duty following an acute infec-

tious diarrhea episode, generate critical evidence to fill current gaps in clinical management of acute infectious diarrhea in deployed military, and produce a clinical practice guidance for broad application in deployed military settings.

To achieve these aims, a multi-site randomized controlled clinical trial is starting this July to assess the equivalence of three different single-dose antibiotic regimens (azithromycin 500 mg, levofloxacin 500 mg, rifaximin 1650 mg) augmented with loperamide for efficacy in treatment of individuals presenting with acute watery diarrhea. In addition, the trial will evaluate the equivalence of azithromycin 1000 mg with and without loperamide for efficacy in treatment of individuals presenting with dysentery or diarrhea plus fever.

The results from this 18-month clinical trial will be used to develop and disseminate published clinical practice guidelines for the management of TD during deployment for the U.S. Navy, U.S. Marine Corps and U.K. MoD forces.



Researchers met February 20-23, 2012, at the Institute of Naval Medicine in Alverstoke, U.K. to discuss planning for a joint research study directed at gaining critically needed information on the treatment of acute watery diarrhea and dysentery (travelers' diarrhea).

Biological Defense Group Stands Out in Disease Threat Exercise

By Michael Stockelman, NMRC Biological Defense Research Directorate

The Genomics Department of the Naval Medical Research Center's (NMRC) Biological Defense Research Directorate (BDRD) kicked into high gear to participate in a Science and Technology Pipeline exercise for the Defense Threat Reduction Agency (DTRA) Chemical and Biological Technologies Directorate in November 2011.

BDRD and three other Federal organizations used cutting-edge technologies and strategies to characterize a biological threat in a disease outbreak scenario. BDRD was the first group to sequence and use metagenome sequence data to identify the candidate agents from the specimens and to report results suitable for urgent development of deployable assays for detection of the new biothreat agent.

For the exercise, the participating labs received simulated medical specimens from a fictional deployed Army unit affected by an unidentified illness. Each lab recovered genetic material from the specimens and performed analytical techniques, including high-throughput genomic sequencing and bioinformatic analysis, which were com-

BDRD was the first group to sequence and use metagenome sequence data to identify the candidate agents from the specimens....

bined with clinical details of the scenario to identify the agents responsible for illnesses. In addition to the technical aspects of identifying the illness, the exercise was designed to reflect each laboratory's personnel, material and financial requirements and readiness for performing advanced analysis on short notice.

Such information is essential for managing the nation's readiness to respond to emerging biological threats.

BDRD Genomics' success is notable because this was the first major test since the directorate's BRAC relocation



A senior technician in the NMRC Biological Defense Research Directorate Genomics Department operates a high-throughput DNA sequencing instrument. Using this method and other next-generation technologies, BDRD Genomics determined the genomic sequences and identities of potential biothreat agents in an exercise for the Defense Threat Reduction Agency.

in 2011 from NMRC headquarters in Silver Spring Md. to Ft. Detrick in Frederick, Md.

BDRD is now located on the new National Interagency Biodefense Campus, along with biodefense-related groups from the Army, Department of Homeland Security, Department of Health and Human Services, and Department of Agriculture. After months of planning for the move and careful relocation of DNA processing and sequencing equipment, BDRD Genomics performed ahead of their peers in this exercise.

BDRD Genomics studies conventional and genetically modified or unknown biothreat agents using genomic and metagenomic approaches such as rapid DNA sequencing and gene expression profiles. This knowledge is used for the rapid identification of biothreat agents and molecular targets for detection, diagnostics and therapeutics.

BDRD Genomics uses next-generation genomic sequencing systems to generate billions of base pair sequence per run as well as genetic analysis tools, including rapid custom

high-density microarray production (for gene expression analysis) and rapid phenotyping (biological characterization) capability.

BDRD Genomics' ability to analyze novel agents for genetic and biochemical features is complementary with other BDRD departments.

BDRD's Vaccine and Medical Countermeasures department investigates biological targets for preventing and treating illness, while the Immunodiagnostics and Molecular Diagnostics departments use the unique characteristics of biological agents to develop assays for agent detection.



Inauguration of New Collaborative Laboratory in Cusco, Peru

From NAMRU-6 Public Affairs

The Instituto de Medicina Tropical “Alexander Von Humboldt” Universidad Peruana Cayetano Heredia Sede Regional – Cusco was officially opened January 9. This satellite laboratory was the vision of the University of Texas Medical Branch (UTMB) and the Universidad Peruana Cayetano Heredia (UPCH) with the support of Naval Medical Research Unit No. 6 ([NAMRU-6](#)).

When completely outfitted, this laboratory will provide a platform for routine microbiology and parasitology along with more molecular techniques, including quantitative and multiplex polymerase chain reaction. The hope is also to provide a lab for rotating students in which they may be provided experiences in clinical infectious disease research.

In charge of the facility is Dr. Miguel Cabada, who received his medical

training at Cayetano University and later completed his residency at Jackson Memorial Hospital – University of Miami and fellowship in infectious diseases at UTMB. He currently holds faculty positions at both UPCH and UTMB and is quickly becoming a prominent researcher in diarrheal disease.

In attendance were Lt. Cmdr. (Dr.) Drake H. Tilley, NAMRU-6; Miss Kelsey O'Brien, NAMRU-6; Dr. Fabiola Leon Velarde, president of UPCH; Dr. Eduardo Gotuzzo, director of the Tropical Medicine Institute at UPCH; Dr. Clinton White, director of Infectious Disease at UTMB; Dr. Peter Melby, director of the Tropical Medicine Institute at UTMB; Dr. Matthew Dacso, director of Global Health Education at UTMB; Dr. Gladys Concha, vice president for research at Universidad de San Antonio Abad del Cusco (UNSAAC); and Dr. Ostwald Avendano, dean of the School of Medicine

at UNSAAC.

Tilley and his NAMRU-6 team, which includes O'Brien, Dr. Claudio Lanata, Dr. Willy Lescano, Dr. Matt Kasper, and Dr. Michael Gregory, have been key supporters and have teamed up with Cabada in an ambitious project to study travelers' diarrhea within a Spanish-language school in Cusco.

The current project is designed to provide true incidence data concerning travelers' diarrhea, including those that carry pathogens asymptomatically. If successful, this project will pave the way for better immunologic assessments related to different pathogens and further clinical trials evaluating treatment options for this disease.

Overall, this relationship and new laboratory have dramatically expanded the capability to perform tropical medicine research within this region of Peru and is sure to foster great research projects to come.



From left to right, back to front: Dr. Matthew Dacso, Dr. Jose Luis Venero, Dr. Drake H. Tilley, Miss Kelsey O'Brien, Dr. Eduardo Gotuzzo, Dr. Fabiola Leon Velarde, Dr. Peter Melby, Dr. Clinton A. White, Dr. Ostwald Avendano, Dr. Martin Montes, Dr. Miguel Cabada, Mrs. Martha Lopez, Dr. Gladys Concha, Dr. Maria Cruz, Dr. Theresa Ochoa and Dr. Karen Mozo.

NAMRU-Dayton's Role in Hypoxia Study



F-22 Raptor in flight. Photo courtesy of the U.S. Air Force.

By Dr. Jeffrey Phillips, NAMRU-Dayton

The Naval Medical Research Unit-Dayton (NAMRU-Dayton) at Wright-Patterson Air Force Base in Ohio continues to develop ties with local Air Force partners in the Maj. Gen. Harry G. Armstrong Complex.

Recently the NAMRU-Dayton hypoxia research group was invited to join the U.S. Air Force Physiological Data Analysis Center (PDAC) scientists from the 711 Human Performance Wing. The PDAC was established by the Air Force Safety Investigation Board (SIB) to address the recent spate of hypoxia-like incidents in the F-22 Raptor community.

With aviation safety data indicating that hypoxia continues to be one of the top aeromedical risk factors, NAMRU-Dayton scientists have increased their efforts related to in-cockpit hypoxia detection and mitigation over the past decade. These researchers bring unique expertise regarding the response of pulse oximetry to hypoxic hypoxia (low pressure/lack of oxygen) and have developed analytic methods to determine whether observed blood O₂ desaturation events are the result of hypoxic hypoxia, stagnant hypoxia (Gz

forces) or other influences.

Differentiation between types of hypoxia through pulse oximetry required analysis of human performance research where participants were subjected to a simulated hypoxic event using the Reduced Oxygen Breathing Device (ROBD) and simulated G-forces.

This work will support the identification of a non-intrusive sensor durable enough for a flight environment.

Future research will investigate cognitive and physiological effects under hypoxic conditions in an effort to allow for quick and accurate physiological detection of a pilot's compromised cognitive state. These and related issues are now being addressed across the services in a coordinated manner as a result of this new partnership.

This work will benefit the Naval services, and knowledge and technologies developed in this effort can address similar problems identified in aircraft such as the F/A-18.

This collaboration between Navy and Air Force scientists represents the unique benefit of the BRAC-created Joint Center for Aeromedical Research, Education and Training at Wright-Patterson.

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our research with the civilian biomedical research community as well as other branches of the military," said DeInnocentiis. "The hard work of completing the 2005 BRAC [Base Realignment and Closure] decisions resulted in the capability we have today, and now we would like to share these resources with others, including the civilian medical community."

NAMRU-San Antonio conducts medical, dental and directed energy biomedical research that focuses on ways to enhance the health, safety, performance and operational readiness of Navy and Marine Corps personnel in routine and combat operations.

From left: former U.S. Surgeon General Vice Adm. Richard H. Carmona; Carrie Crane, head of Veterinary Sciences, NAMRU-San Antonio; Deputy Joint Staff Surgeon and Director, Reserve Medical Readiness Operations and Affairs, JCS, Brig. Gen. Paul S. Dwan; and Capt. William Padgett view a surgical suite in the Tri-Service Research Laboratory. Photo by Joe N. Wiggins.



The DoD Birth and Infant Health Registry: The First Million Babies

From NHRC Public Affairs



From 1998 to 2008, health information on over one million infants was added to the DoD Birth and Infant Health Registry, represent-

ing births among Department of Defense beneficiaries in all 50 states and over 20 foreign countries. The registry records, maintained at the Naval Health Research Center (NHRC) Deployment Health Research Department in San Diego, represent all service branches and geographically diverse locations.

Infant health indicators assessed

include birth defects, preterm birth, and growth problems in infancy.

"The registry is an important tool for monitoring the health of military families," said Dr. Ava Marie S. Conlin, a member of the registry team.

"Electronic DoD databases are leveraged to obtain healthcare utilization data and parental demographic and exposure data. Supplemental data, including self-report, are obtained as needed to address specific concerns."

Concerns exist that military-unique exposures may pose a risk to reproductive health and existing civilian registries cannot accurately assess these issues among military families.

Uses for these data include establishing the prevalence of birth defects and evaluating associations of various birth outcomes with specific exposures, such as smallpox vaccination or

deployment. Overall, the registry addresses the reproductive health concerns of military families with strong science and surveillance, contributing to progress in the prevention of birth defects and other infant health challenges.

The registry reported that the overall prevalence of birth defects is between three and four percent. The most commonly diagnosed were Ventricular Septal Defect, Atrial Septal Defect, Patent Ductus Arteriosus and Hypospadias/epispadias.

"This is consistent with civilian counterparts," said Conlin.

Established in 1998 by the Assistant Secretary of Defense for Health Affairs, the DoD Birth and Infant Health Registry aims to better understand the reproductive health effects of military service.



DoD Birth and Infant Health Registry Team, from left: Isabel Jacobson, MPH; Connie DeScisciolo, PhD; Anna Bukowinski, MPH; Sydney Lee, MS (standing behind); Carter Sevick, MS; Kathy Snell, BS; Ava Marie Conlin, DO, MPH; Nancy Crum-Cianflone, MD, MPH (absent from photo: Gia Gumbs, MPH).

Army Researchers Visit Naval Submarine Medical Research Laboratory

From *The Dolphin*



The Naval Submarine Medical Research Laboratory (NSMRL) in Groton, Conn. hosted members from the U.S. Army Medical Research and Materiel Command to discuss nutritional research across the services February 3. During their one-day visit, the medical researchers discussed a host of topics including epidemiology, bone density, enclosed space effects, circadian effects, and psychological and behavioral choices. The meeting was held to foster collaboration within the U.S. Armed

Forces Research and Development Community.

"The Army and the Navy have similar interests regarding health of warfighters in confined environments," said Capt. Kelleher, commanding officer, NSMRL. "This meeting was an exceptional opportunity to lay the groundwork for collaboration with our Army colleagues. As our expertise and resources are complementary, I am looking forward to future efforts together to improve the health and welfare of the submarine community."

Following research-related briefings, the researchers participated in a tour of NSMRL laboratory facilities, including a once-in-a-lifetime visit aboard Los Angeles class attack submarine USS Miami (SSN 755).

NSMRL's mission is to protect the health and enhance the performance of warfighters through submarine, diving and surface biomedical research solutions. Established in World War II to conduct mission-critical studies in night vision, sonar sound discrimination, and personnel selection, NSMRL continues to provide expert scientific and technical knowledge in biomedical research, development, test and evaluation of submarine, diving and medical systems and procedures to support the ever-changing operational requirements of the U.S. Armed Forces. All of the laboratory's efforts relate to its mission of protecting the health and enhancing the performance of today's warfighters.

Infectious Diseases Seminar Series Features Lt. Vince Gerbasi

In February, Lt. Vince Gerbasi, MSC, provided the Naval Medical Research Center's (NMRC) monthly Infectious Diseases Directorate (IDD) seminar. Titled "Fighting our endogenous retroviruses while managing collateral damage," Gerbasi's seminar addressed the recent advances in the field of ribonucleic acid (RNA) silencing and his research in the field.

The initial discovery of RNA silencing by American biologists Andrew Fire and Craig Mello in 1998 provided a roadmap for future therapies designed to kill viruses that have RNA genomes. Fire's and Mello's initial discovery has since resulted in a multitude of medical breakthroughs and eventually culminated in their winning the 2006 Nobel Prize in physiology or medicine.

RNA interference functions like a smart bomb for RNA genomes. The RNA interference system can be programmed to specifically destroy any RNA target. Because many of the viruses that affect service members contain RNA genomes (including HIV, influenza, rhinoviruses, dengue virus, and others), RNA interference may be used as a future therapy in military clinics to suppress symptoms and reduce viral load in cases where we lack drugs or vaccines.



NMRC Researcher Contributes to AJN Award Winning Book

The book *Acute and Chronic Wounds*, edited by Ruth Bryant and Denise Nix, won The American Journal of Nursing (AJN) 2012 Book of the Year Award in the Medical-Surgical Nursing category. Researchers from the Naval Medical Research Center ([NMRC](#)) contributed a chapter to the book.

The chapter titled "Traumatic Wounds: Bullets, Blasts, and Vehicle Crashes" was written by Army Capt. Christopher Graybill; Army Col. Alexander Stojadinovic; Cmdr. David Crumbley, NC, USN; and Cmdr. Eric Elster, MC, USN. Graybill was a Walter Reed Army Medical Center research resident working at NMRC when the chapter was written. Elster is a researcher in the NMRC Operational and Undersea Medicine Directorate.

The chapter places an emphasis on treating war wounds. Commenting on the award, Elster, who served a tour

as the Director of Surgical Services for a multinational medical team in Kandahar, Afghanistan, said the lessons learned that are the subject of the chapter were based on experience gained by taking care of warfighters during the current conflicts. These treatments are being translated successfully into civilian clinical practice.

Elster is also a surgeon at the Walter Reed National Military Medical Center and an Associate Professor of Surgery at the Uniformed Services University in Bethesda, Md.

A summary of the chapter states traumatic wounds result from any foreign body impact that results in tissue damage. Their etiology can vary widely: bullet or projectile wounds, blasts, industrial accidents, falls, and car crashes. Modern care for the trauma patient has its origins in military medicine. Practices developed to treat war injuries have been modified and

refined to address civilian trauma. War injuries tend to be exaggerations of civilian injuries. For example, an M16 or AK-47 round causes significantly more damage than a 22 or 45 round even though the mechanism is largely the same. Although the severity of injury may be different, the principles guiding wound care remain the same.

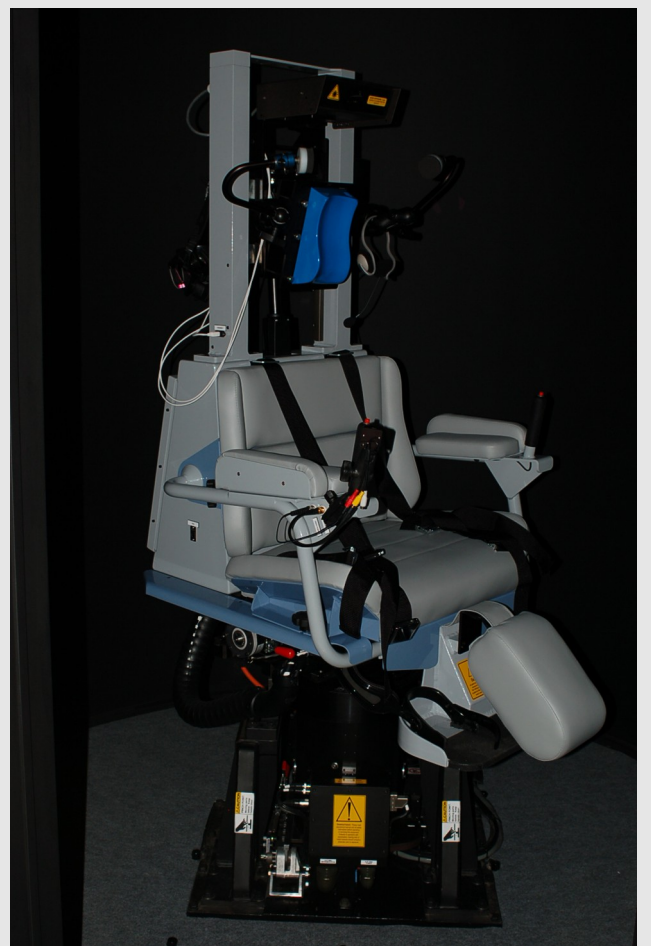
According to the AJN website, the Medical-Surgical Nursing category focuses on the fundamentals to understanding the complex clinical needs and comprehensive diagnoses of patients in acute care setting such as an adult hospital unit, home care or long-term care. The AJN awards recognize the most valuable publications of the year as chosen by AJN's panel of judges. Peer-reviewed and evidence-based, AJN is considered the profession's premier journal and has been identifying its selections for the year's best work since 1969.

NAMRU-Dayton's Newest Capability – Neuro-Otologic Test Center

By Roy Dory, NAMRU-Dayton

Among the Naval Medical Research Unit-Dayton's ([NAMRU-Dayton](#)) most recent acquisitions is the Neuro-Otologic Test Center (NOTC). The NOTC consists of a rotating barany chair capable of accommodating both dynamic off-vertical and off-axis rotations. The chair is located in a light-tight cylindrical enclosure onto which various visual stimuli can be projected and synchronized with the chair's motion. In addition to providing assessments of vestibular function, the NOTC affords NAMRU-Dayton researchers the ability to investigate and isolate physiological mechanisms that contribute to fleet aeromedical problems, including motion sickness and associated interventions, and sensory interactions related to spatial orientation.

NAMRU-Dayton is located at Wright-Patterson Air Force Base in Ohio. NAMRU-Dayton's mission is to maximize warfighter performance and survivability through world-class aeromedical and environmental health research by delivering solutions to the field and the Fleet.



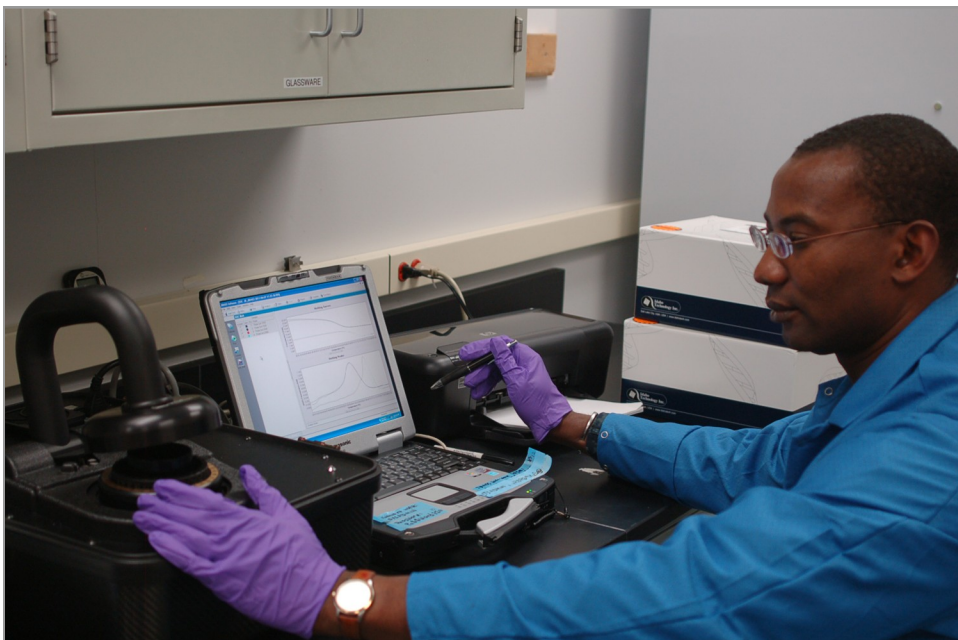
Dayton Lab Acquires Joint Biological Agent ID and Diagnostic System

By Lt. Andre Ntamack, NAMRU-Dayton

The Naval Medical Research Unit -Dayton ([NAMRU-Dayton](#)), located at Wright-Patterson Air Force Base in Ohio, acquired the Joint Biological Agent Identification and Diagnostic System (JBAIDS) in May 2011. JBAIDS is a reusable, portable, modifiable identification and diagnostic system that employs polymerase chain reaction (PCR) technology, which is capable of simultaneous, reliable identification of multiple biological threat agents of medical and operational significance.

NAMRU-Dayton is actively involved in research and operational endeavors involving the JBAIDS system. Dr. Karen Mumy, a microbiologist at NAMRU-Dayton, has teamed with U.S. Air Force School of Aerospace Medicine (USAFSAM) researchers to validate the Food Analysis Transport System (FATS) sampling methodology developed to identify select agents that cause foodborne illness.

In addition, the 88th AMDS/SGPB Bioenvironmental Engineering Group has asked NAMRU-Dayton to collaborate in generating exercise scenarios to test biological threat consequence management capabilities at Wright-Patterson Air Force Base.



JBAIDS is composed of a thermocycler capable of automatically analyzing samples for the presence of targeted DNA sequences and a rugged laptop preloaded with the easy-to-use JBAIDS instrument run and analysis software that will automatically collect, interpret data and report the results.

JBAIDS enhances force health protection by providing the capability to determine appropriate treatment, risk and prevention measures in response to the presence of biological agents. PCR is a technique that amplifies specific regions of DNA in order to produce enough DNA to be adequately tested.

JBAIDS is configured to support reliable and rapid identification of biological agents from various

sources including clinical, environmental (e.g., air, water, food, entomology, veterinary) and forensic samples. Since biological threat agents (e.g., pathogens and toxins) can be intentionally or accidentally delivered to target areas anywhere in the theater(s) of operation affecting military readiness and effectiveness, JBAIDS provides rapid evaluation to protect military and civilian personnel.

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